

they were immature birds just going through the motions of nest-building. In adopting an urban way of life, there can be little doubt that these particular ravens are following their forebear's old trade as town scavengers. Very little misses the sharp eye of a raven and it is likely these opportunistic birds have already discovered rich pickings amongst the leftovers from 'carry-out' meals carelessly discarded on the surrounding streets.

REFERENCES

- Gibson, I.P. (2007). *Clyde Bird Report 2004*. SOC. Clyde Branch
- Mitchell, J. (1981). The decline of the Raven as a breeding species in Central Scotland. *Forth Naturalist and Historian* 6, 35-42.
- Mitchell, J. (1994). Recovery of a lowland Raven population. *Clyde Birds* 7, 77.
- Mitchell, J. (2000). Ravens nesting alongside the Dumbarton Boulevard. *Glasgow Naturalist* 23 (5), 59-60.
- Ratcliffe, DA. (1997). *The Raven*. London: T & AD Poyser.
- Thom, VM. (1986). *Birds in Scotland*. Calton: T & AD Poyser.

Marine midges (Diptera, Chironomidae) at Wemyss Bay in the Firth of Clyde

Myles O'Reilly

Scottish Environment Protection Agency, Redwood Crescent, East Kilbride G74 5PP
E-mail: myles.oreilly@sepa.org.uk

In Britain there are 161 species of biting midges, family Ceratopogonidae, (Chandler, 1998) and nearly 600 species of non-biting midges, family Chironomidae (Langton & Pinder, 2007). The west coast of Scotland is renowned for those biting midges that feed on warm-blooded mammals, such as *Culicoides obsoletus* and *C. impunctatus*, which are the scourge of outdoor activities in the summer months. The non-biting chironomids, on the other hand, are little known except to aquatic biologists. Their larvae inhabit freshwater rivers, streams, and ditches and may also be found in brackish water. They are frequently observed in aquatic invertebrate monitoring surveys. Among the British chironomids there is one species of marine midge, *Clunio marinus* Haliday, whose larvae inhabit fully marine waters. *C. marinus* is most abundant in the mid-littoral zone, especially in southern and western UK. Its larvae have been associated with oyster and mussel beds (Cranston, 1982). A glimpse into its rather unusual life history is described in the encounter below.

During a warm, balmy, summer's evening on August 8th 2005, and again on August 13th 2006, an excursion was made to the shore at Wemyss Bay, in the Firth of Clyde. The tide was out on both occasions and large swarms of midges were to be seen dancing near rocks at the water's edge. The water was calm and quite a few midges were observed skimming along the water surface with their wings whirring. Numerous midges were also seen on nearby rocks, with their wings fanning in a similar manner, scurrying rapidly over the barnacles and tiny juvenile mussels. Many of the latter midges appeared to be trailing a large extrusion from the tip of their abdomen. At first it was thought these might be egg strings but closer examination revealed that the attachment was the grub-like body of a second wingless midge. Subsequent microscopical examination of captured specimens revealed these were nuptial pairs of the marine midge, *Clunio marinus*, identified by the distinctive tail end (hypogoeum) of the male (Langton & Pinder, 2007).



Fig. 1. Female and male marine midge (*Clunio marinus*) from Wemyss Bay in the Firth of Clyde.

The male marine midge is around 1.5mm long with a well developed thorax with legs and wings. The female is also around 1.5mm, with a short thorax with short vestigial legs and no wings. The female abdomen is well developed and rather stout (Fig. 1). The larvae of *Clunio marinus* live in small tubes on the seabed, where they graze detritus in a similar manner to their freshwater relatives. When mature, the midge pupae rise to the water's surface timing their arrival to spring low tides during calm weather. The males hatch out and take flight but the females remain suspended at the surface. The males skim along the water surface until they find a hatching female with which to pair. With the female in tow the males head for shore to seek suitable egg-laying sites for their consort (Olander & Palmen, 1968). The Wemyss Bay marine midges appear to favour encrustations of small mussels close to the low water mark as appropriate places to lay their egg masses. The midges only have a few hours to hatch, find a mate, and lay their eggs, which are then covered by the advancing tide. Neither of the adult midges feed and both die shortly after egg laying.

Clunio marinus and similar marine midges in other parts of the world have developed complex bio-rhythms in order to keep track of local spring tide times (Saigusa & Akiyama, 1995).

REFERENCES

- Chandler, P. (1998). Checklists of Insects of the British Isles (New Series) Part 1. Diptera. *Royal Entomological Society Handbooks for the Identification of British Insects* 12(1): 53-57.
- Cranston, P.S. (1982). A key to the larvae of the British Orthocladiinae (Chironomidae). *Freshwater Biological Association, Scientific Publication No.45*, 152pp.
- Langton, P.H. & Pinder, L.C.V. (2007). Keys to the adult male Chironomidae of Britain and Ireland. *Freshwater Biological Association, Vol.1*, 239pp., *Vol.2*, 168pp.
- Olander, R., & Palmen, E. (1968). Taxonomy, ecology and behaviour of the Northern Baltic *Clunio marinus* Halid. *Ann. Zool.Fenn.* 5: 97-110.
- Saigusa, M., and Akiyama, T. (1995). The tidal rhythm of emergence, and seasonal variation of this synchrony, in an intertidal marine midge. *Biol. Bull.* 188, 166-178.

First British record of the white-banded grapple-worm (*Melinna albicincta*) from deep water in the Sound of Jura

Myles O'Reilly & Stephen Nowacki

Scottish Environment Protection Agency (SEPA),
Redwood Crescent, East Kilbride G74 5PP
E-mail: myles.oreilly@sepa.org.uk

Under the new European Union Water Framework Directive, SEPA was required to set up a network of new marine surveillance monitoring sites around the Scottish coast to assess marine ecological quality. In May 2006 the SEPA survey vessel, "Sir John Murray", headed for some proposed sites in the Sound of Jura. This preliminary survey was focussed on the community of creatures living in, or on, the seabed in waters up to 200m deep. The area had not been sampled previously by SEPA, although some dredging surveys were undertaken by the Scottish Marine Biological Association in 1975 (Brown, 1983).

Five stations were selected on a 37km transect running roughly NE to SE along the Sound. Sediment grab samples (each of surface area 0.1m²) were collected at the stations to investigate the invertebrate community (Fig. 1). All the samples consisted of similar fine mud. The deepest station (Station SJ1, depth 174m) differed slightly from the others with the presence of large worm-tubes protruding from the mud surface. These

tubes were ornately decorated with numerous tiny bivalve shells arranged in interlocking stacks and were quite unlike any worm-tubes seen before by SEPA marine ecologists on board the "Sir John Murray". The mud grabs were sieved on 1mm mesh and the retained fauna and worm-tubes (with their occupants) were fixed using formalin. The fauna was examined on return to the laboratory and comprised a variety of polychaete worms, bivalve molluscs, small crustaceans as well as some brittle-stars and small sea cucumbers. The number of invertebrate species per grab sample was quite variable, ranging from only 3 to over 40. The occupants of the large tubes were carefully extracted and were revealed to be a type of grapple-worm (Fig. 2).



Fig. 1. Deploying the seabed grab sampler in the Sound of Jura.



Fig. 2. A 6cm grapple-worm from the Sound of Jura, alongside its decorated tube. Anterior of worm (and of tube) to the right.

Grapple-worms (*Melinna* spp.) are sedentary tube-worms characterised by the presence of a pair of stout grapple-like hooks just behind their row of gill tentacles. The standard key used to identify terebellomorph polychaetes from Scandinavian (and British) waters, (Holthe, 1986), cites two species, *Melinna palmata* and *M. cristata*, from British seas but more recently it has been realised that many records of *M. cristata* in the area actually refer to another species, *M. elizabethae*, (see Mackie & Pleijel, 1995). *M.*